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## ABSTRACT

A signal processor programmed with a set of instructions to perform a data transfer encoding method. The encoding method permits communication from the signal processor to a subscriber, where the subscriber is connected to a digital network by an analog loop. The signal processor may be connected through a digital connection to the digital network. The signal processor selects a digital codeword from a set of digital network codewords. The digital network codewords may correspond to a set of quantization values applied at a line interface which couples said digital network to said analog loop. The signal processor converts the data stream into a sequence of digital codewords from the set of digital codewords. The digital codewords may then be sampled and transmitted through the digital connection to the digital network.

A signal processor performing a decoder method is also provided. The signal processor receives an analog signal representing the sequence of codewords. The signal processor converts the analog signal into the sequence of codewords.